4.4 SURFACE HYDROLOGY

This section evaluates the surface runoff, surface water quality, and flooding conditions at the site both before and after project implementation. This section summarizes information from the Hydraulics/Hydrology Study by Nolte Associates, a Fluvial Study prepared by Howard H. Chang Consultants, and a 100 Year Developed and Undeveloped Hydrology Study and Hydraulics Study prepared by Bryan A. Stirrat & Associates (BAS). All of the technical reports are contained in Appendix H.

4.4.1 EXISTING CONDITIONS

4.4.1.1 Regional Hydrology

The Porter-Cologne Water Quality Control Act and the Federal Water Pollution Control Act Amendments of 1972 require that Water Quality Control Plans (Basin Plans) be prepared for the nine state-designated hydrologic basins in California. The San Diego Region Basin Plan (Basin Plan) was approved by the State Water Resources Control Board (SWRCB) on March 20, 1975 and updated in 1994.

The project site is located within the San Diego Drainage Province, which covers approximately 3,900 square miles in San Diego County and portions of southern Riverside and Orange counties. The boundaries of the region include the Santa Ana Drainage Province on the north and the United States-Mexico International Boundary on the south. The entire San Diego Drainage Province is under the jurisdiction of the California Regional Water Quality Control Board (RWQCB), Region 9 (San Diego Region). The project site is located within the San Luis Rey Hydrological Unit, Monserate Hydrologic Area, Pala Hydrologic Subarea.

The San Luis Rey River stretches inland from its mouth in Oceanside to its headwaters near Mount Palomar. The West Fork of the San Luis Rey River arises on the southeast face of Palomar Mountain, in the Cleveland National Forest, and drains the center of the range as it flows eastward into Lake Henshaw. The East Fork flows from a mountainous region of the Cleveland National Forest. Both forks meet in the San Jose Valley and drain into Lake Henshaw. From Lake Henshaw the river flows parallel to SR 76 continuing to the Rincon Reservation. From the north end of the Rincon Reservation the intermittent flow is northwest through the Pauma Valley and Pauma Basin until it empties into the ocean in Oceanside.

The San Luis Rey River has its origin on Bucksnort Mountain in the Anza-Borrego Desert Park at an elevation of about 5,500 feet above mean sea level (amsl). The San Luis Rey River basin drains approximately 560 square miles or 358,400 acres. It is about 50 miles long and 16 miles wide and is divided by the Henshaw Dam into two hydrologic units. Henshaw Reservoir controls all runoff from the upper 206 square miles of the basin. Mean annual precipitation ranges from 11 to 30 inches, with increasing precipitation landward and with increasing elevation.

Several diverse plant communities, both natural and agricultural, are located within the San Luis Rey watershed. Within the river boundaries are 24 separate resource conservation areas as defined by the County of San Diego. The San Luis Rey River area also contains unique geologic features, sensitive species, and scenic resources.

4.4.1.2 Local Hydrology

The San Luis Rey River valley extends to the east and west of the site, with major tributary canyons to the northwest and south, and their surrounding formation ridge systems and mountainous terrain. The area is mixed use, with a predominately rural character. Agricultural uses are located on the valley floor. Pala Rey Ranch is located to the west of the site, H.G. Fenton Company, a sand and gravel mining operation, is located to the north, lower Rice Canyon is to the northwest, Couser Canyon is to the south, and the Pala Indian Reservation, which includes a portion of the Gregory Mountain, is located to the east.

Agricultural land refers to areas supporting active agricultural cultivation or cattle grazing. A total of about 97 acres of agricultural land, primarily grazing areas, exist on the project site. The dairies on the project site, which are also considered agricultural lands, were mapped as a combination of agricultural land and developed land and occupy about 88 acres. The abandoned Lucio Family Dairy, which closed in 1986, is located north of the San Luis Rey River, and south of SR 76. The operational Pete Verboom Dairy exists to the west of the Lucio Dairy and is adjacent to and south of SR 76. Existing land uses within this general area include a pear orchard, pastures, various farm outbuildings, and dirt access roads along fields. Pastures and a hay shed are situated on the valley floor on the south side of the river.

Elevations on the Gregory Canyon site range from approximately 300 feet above mean sea level (amsl) at the mouth of the canyon in the San Luis Rey River drainage to 1,200 feet amsl at the head of the canyon at the south. Much of the canyon is steep, rugged terrain containing numerous boulder outcrops on the eastern side with only a few isolated boulders on the western canyon wall. The canyon flattens somewhat at the mouth where it meets the alluvial deposits of the San Luis Rey River drainage. A prominent knoll extends into the drainage channel on the west side of the canyon mouth.

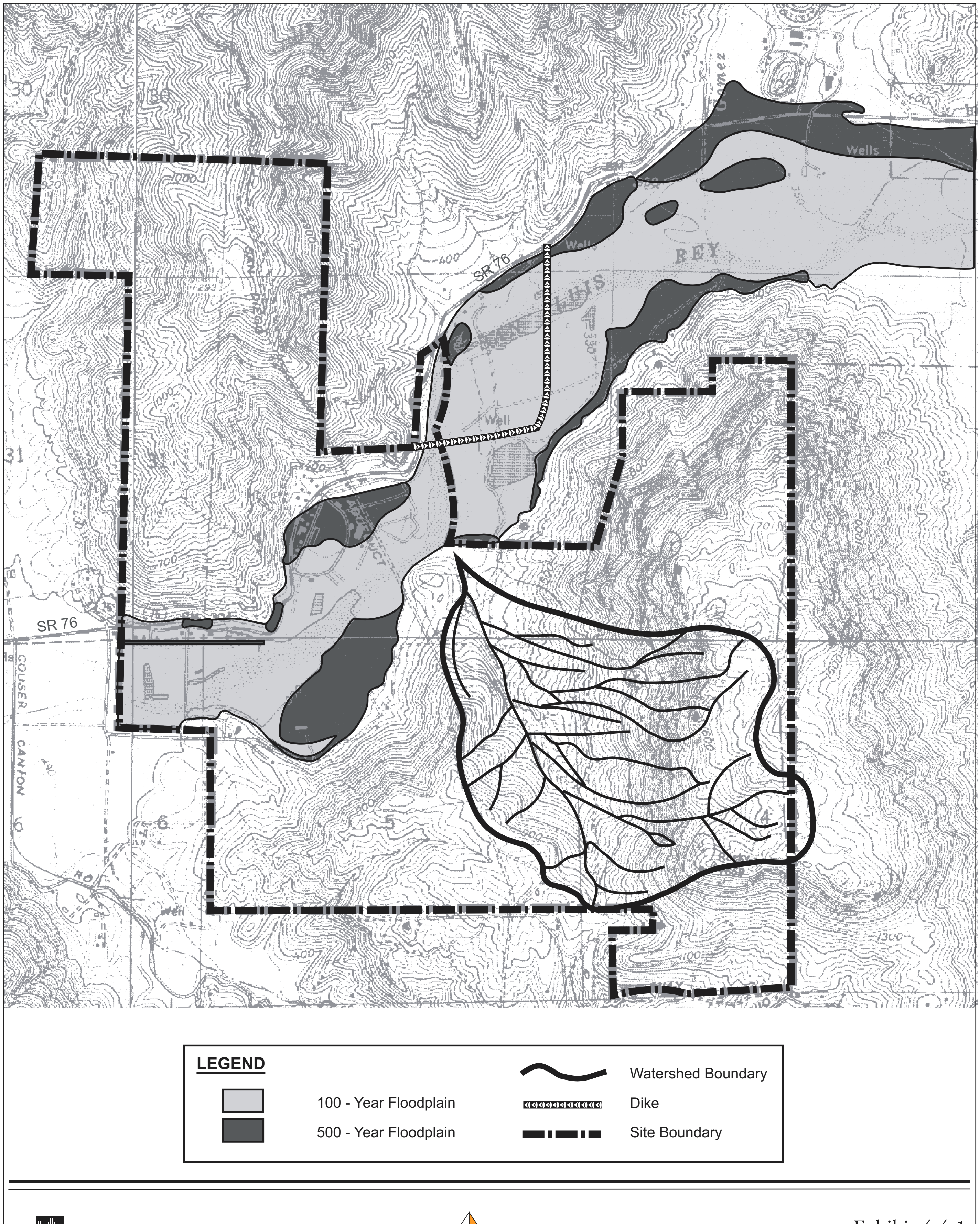
The Gregory Canyon watershed drains approximately 458 acres or approximately one tenth of one percent of the San Luis Rey River basin area. Gregory Canyon discharges northward to the San Luis Rey River as shown on Exhibit 4.4-1. A portion of the project site lies within the Couser Canyon drainage area which also flows into the San Luis Rey River.

Most of the watershed lies east of the Gregory Canyon channel axis, in the Gregory Mountain area which rises 800 to 1,000 feet above the canyon floor. The stream that drains Gregory Canyon is considered ephemeral (i.e., it flows briefly in direct response to precipitation in the vicinity). Surface flow occurs during moderate to large storm events.

The bed material in the San Luis Rey River channel near the project site is a mixture of sand and gravel, with an insignificant amount of silt or other finer materials. Sediment samples were collected along the stream channel. The bed material along the river is fairly uniform. The dominant material is median sand which is highly transportable during floods. The California Division of Mines and Geology has studied the material under the river bed of the San Luis Rey River. The findings show the existence of a thick alluvium underlying the river bed. These findings are confirmed by sand mining in the area. Many of the sand pits reached depths in excess of 50 feet. The predominant material on adjacent hillsides is decomposed granite.

4.4.1.3 Flooding and Scour

Portions of the project site are located within areas designated as 100-year and 500-year flood hazard areas as shown on Exhibit 4.4-1. The 100-year peak discharge for the San Luis Rey River



PCR

NOT TO SCALE

Exhibit 4.4-1
Drainage Patterns and Surface Water Bodies

Sources: FEMA Flood Insurance Rate Maps, June 1997; David Evans and Associates, Inc., 1999; PCR Services Corporation, 1999 at the study reach is 30,000 cubic feet per second (cfs) based on the FEMA Flood Insurance Study (June 11, 1997).

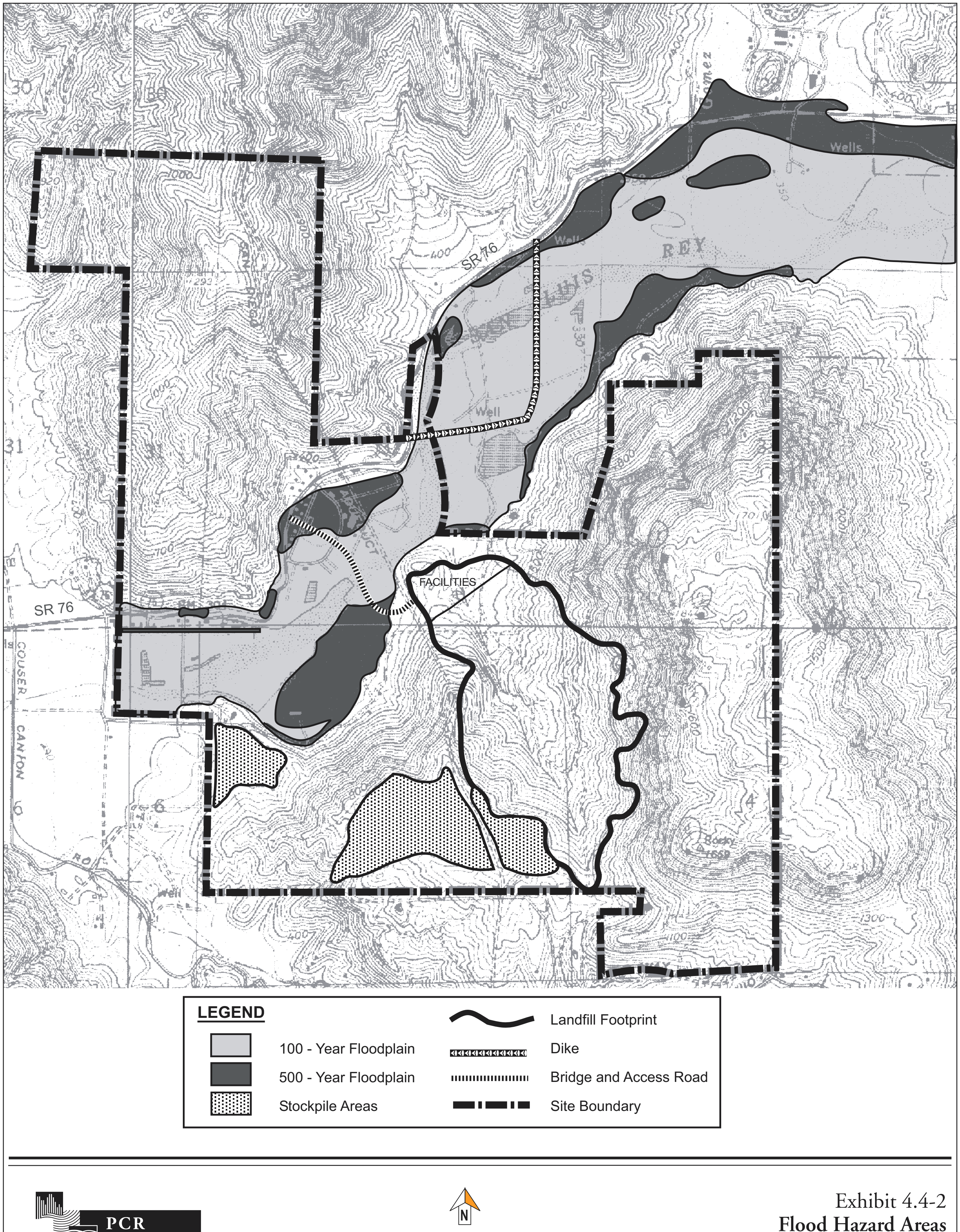
BAS conducted a pre-development surface water analysis using the Rational Method Computer program (in accordance with San Diego criteria) to determine the peak flows discharged from the Gregory Canyon watershed (Appendix H). For computer modeling, the watershed was divided into six sub-basins. The model simulated a 100-year recurrence, 24-hour storm to obtain a peak discharge rate. A runoff coefficient of 0.4 was used for the pre-development analysis because the area is in a mostly natural state. The resulting peak flow rate for the pre-developed condition is 765 cubic feet per second (cfs).

The San Luis Rey River is a disturbed stream, primarily due to dams and reservoirs, and sand and gravel mining. Mining activities have created several major pits in the streambed. The dairy on site is located on both sides of the river. The wooden bridge formerly connecting the two sides of the dairy operations was washed out in 1995 by storm flows. An unpaved, low-flow water crossing exists adjacent to the damaged bridge structure. Because of these human activities, the natural equilibrium of the stream channel has been altered.

“Scour” is the removal of sediment (soil and rocks) from streambeds and streambanks caused by moving water. Although scour may occur at any time, it is usually more significant during high flows, when the water is swift and deep. Swiftly moving water has more energy (turbulence and velocity) to lift and transport sediment than slowly moving water. The existing San Luis Rey River bed is subject to scour during major storm events and up to 20 feet is estimated to be eroded from the riverbed during peak flows. The San Diego First Aqueduct pipeline bed is also subject to these scouring effects where it crosses the river (Exhibit 4.4-1) and 14+/- feet is estimated to be eroded from the pipeline bed during peak flows.

Rick Engineering prepared the original sand mining reclamation plan and its modifications for the H. G. Fenton operation located to the north of the project site. The modified plan includes a bypass channel through the southeastern portion of the floodplain (see Exhibit 4.4-2). This bypass channel is separated from the deep excavation site by a levee. The original levee was designed to surround the entire deep excavation site as a protection for the probable maximum flood (PMF). The PMF is the flood associated with the probable maximum precipitation (PMP). The PMP is the theoretically greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographic location at a certain time of the year (HMR No. 59, 1999). The original levee design was later modified due to the discovery of an endangered species at the sand mining borrow site. Under the modified plan, the upstream portion of the levee has been constructed to the original standard, but the downstream portion of the levee has been constructed for the 10-year flood. Floods greater than the 10-year flood will still flow into the deep excavation area by overtopping the low levee. In addition, a new excavation on the downstream side of the low levee is in the river channel and this pit will therefore trap bed sediment during future floods. The new excavation has an estimated depth of 30 feet. As it currently exists, the dike is not protected and erodes as it is exposed to river flows (Rick Engineering, 1995). During storms exceeding a ten-year event, the five-foot dike will be overtopped and portions of the streambed shall wash out.

The Fenton dike has the effect of constricting the river and increasing downstream deposition at the First San Diego Aqueduct crossing, as well as causing beneficial upstream deposition to counter scour effects. However, as the Rick Engineering (1995) report indicates, the aqueduct



PCR

Exhibit 4.4-2
Flood Hazard Areas and Proposed Project

Sources: FEMA Flood Insurance Rate Maps, June 1997; David Evans and Associates, Inc., 1999; PCR Services Corporation, 1999 may experience scour since the river channel to the south will widen due to overtopping of the five-foot dike. Continued failure of the dike during large storm events increases the potential for downstream scouring processes, particularly at the First San Diego Aqueduct crossing.

4.4.1.4 Water Quality

Clean Water Act

The Clean Water Act regulates the discharge of pollutants to the waters of the United States. The 1972 amendments to the Clean Water Act prohibit the discharge of any pollutant to waters from point sources, unless a National Pollutant Discharge Elimination System (NPDES) permit authorizes the discharge. As the focus of reducing pollutants was initially on industrial and sewage treatment discharges, the Clean Water Act was amended in 1987 to require the USEPA to create specific requirements for stormwater discharges. In response to the 1987 amendments to the Clean Water Act, the USEPA NPDES Program required NPDES permits for: 1) Municipal Separate Storm Sewer System (also referred to as MS4s or Municipal Permits) generally serving, or located in incorporated places with 100,000 or more people; 2) eleven specific categories of industrial activity (including landfills); and 3) construction activity that disturbs more than five acres or greater of land. Section 402 (p) of the Clean Water Act mandates that the MS4 permits must: 1) effectively prohibit the discharges of non-stormwater to the MS4; and 2) require controls to reduce pollutants in discharges from MS4 to the maximum extent practicable (MEP), including Best Management Practices (BMPs), control techniques, and system, design and engineering methods.

A MS4 permit (hereafter referred to as the Municipal Permit) was issued to San Diego County, the Port of San Diego and 18 cities or copermittees by the San Diego Regional Water Quality Control Board (RWQCB) in February 2001.[1] To meet the Municipal Permit requirements, municipalities are required to implement comprehensive Urban Runoff Management Plans (URMPs) on both a jurisdictional and watershed basis. Pursuant to the URMPs, municipalities, including the County of San Diego, are required to conduct a variety of activities including, but not limited to, the following:

1) Obtain legal authority to comply with the Municipal Permit
2) Control discharges from all land uses and construction (i.e., require BMPs, conduct inspections, and resolve complaints)
3) Enforce local permits and ordinances
4) Implement land use and planning policies that protect water quality
5) Conduct monitoring and reporting

To provide for the Municipal Permit requirements, the County of San Diego has completed and/or is in the process of completing several programs and activities including the adoption of Ordinances relating to stormwater regulations and completion of a County Stormwater Standards Manual. In addition, a Model Standard Urban Stormwater Mitigation Plan (SUSMP) has been proposed by the Copermittees of the Municipal Permit, including the County of San Diego. The purpose of the SUSMP is to address post-construction runoff from new development and redevelopment projects that fall under specific categories. Once approved by the RWQCB, the

[1] Order No. 2001-01, NPDES No. CAS0108758, "Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, and the San Diego Unified Port District"

County of San Diego will have six months to implement programs to manage urban runoff from new development and significant redevelopment.

County Ordinance No. 9424 addresses stormwater and discharge control in the County and is referred to as the County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance (Stormwater Ordinance). In addition, Ordinance No. 9426 adds a County Stormwater Standards Manual (also referred to as Appendix A) to the Stormwater Ordinance. The project will comply with all applicable ordinances and standards. The Stormwater Ordinance prohibits polluted non-stormwater discharges to the stormwater conveyance system; establishes minimum requirements for stormwater management; establishes requirements for development project site design to reduce stormwater pollution through erosion control and sediment management; establishes requirements for the management of stormwater flows from development projects; establishes standards for the use of off-site facilities for stormwater management to supplement on-site practices at new development sites; and establishes notice procedures and standards for adjusting stormwater and non-stormwater management requirements where necessary. A primary component of the Stormwater Ordinance is the establishment of BMPs for all dischargers in the county urban area and additional minimum BMPs for residential activities, commercial activities and facilities and industrial activities and facilities. Preparation of a Stormwater Pollution Prevention Plan (SWPPP) and monitoring or evidence of monitoring by the State General NPDES Permit for Discharge Associated with Industrial Activities is also required for specific facilities by the Stormwater Ordinance. Another primary component of the Stormwater Ordinance is a requirement that proponents of projects requiring specific discretionary permits prepare a Stormwater Management Plan (SWMP) that provides for effective permanent BMPs. The County Stormwater Standards Manual provides more detailed requirements, including BMPs, in support of the Stormwater Ordinance.

Section 67.804 (c) of the Stormwater Ordinance titled "Construction and Application" states: "Stormwater and non-stormwater discharges regulated under a valid facility-specific NPDES permit or facility-specific RWQCB Waste Discharge Requirements permit are not subject to this Ordinance, but shall instead be regulated exclusively by the RWQCB." The RWQCB requires that the project obtain site-specific WDRs regulated by the RWQCB. Regulation of discharges that are under a WDR or site specific permit are exempt from the Stormwater Ordinance. However, the project would meet the intent of the Stormwater Ordinance and Stormwater Manual. Specifically, to obtain authorization for industrial and construction stormwater discharges, the landfill must comply with the State General NPDES Permit for Discharge Associated with Industrial Activities and the State General NPDES Permit for Discharge Associated with Construction Activities. The operator has submitted a Notice of Intent (NOI) to comply with the State General NPDES Permit for Discharge Associated with Construction Activities and will submit a NOI for the State General NPDES Permit for Discharge Associated with Industrial Activities concurrent with the application to obtain WDRs. In addition, a SWPPP and Monitoring Program and Reporting Requirements (MPRR) have been prepared for the landfill in accordance with NPDES General Permit requirements and are contained in the JTD. Construction and operation of all drainage facilities will strictly adhere to the BMPs developed as part of the SWPPP. These, BMPs, which are described below, are consistent with many of the BMPs described in the Stormwater Manual. For example, consistent with the required BMP programs for High Priority Industrial Facilities set forth in the Stormwater Manual, BMPs for the project include activity-specific BMPs, pollution prevention practices, non-structural BMPs and structural controls.

The Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan: (1) designates beneficial uses for surface and groundwaters; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's antidegredation policy; (3) describes implementation programs to protect the beneficial uses of all waters in the region; and (4) describes surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan [California Water Code Section 13240-13244, and Section 13050 (j)]. Additionally, the Basin Plan incorporates by reference all applicable State and Regional Board plans and policies.

California Water Code Section 13000 establishes a general principal of nondegradation, with flexibility to allow some change in water quality that is in the best interests to the state. Changes in water quality are allowed only where beneficial uses are not unreasonably affected. Designated beneficial uses are generally, but not always, present throughout the entire reach of a particular hydrologic unit, area, subarea, or water body. Designated beneficial uses may not be present throughout the year.

Existing beneficial uses for inland surface waters of the San Luis Rey Hydrologic Unit, Monserate Hydrologic Area, Pala Hydrologic Subarea include the following: municipal and domestic, agricultural, and industrial service supply. In addition, surface waters provide beneficial uses for water- and non-water contact recreation.

The project site includes existing agricultural, dairy and cattle grazing uses. Drainage from these uses currently flows into the San Luis Rey River.

Modern agriculture is based on the extensive use of applied chemicals such as fertilizers, pesticides and herbicides to obtain high crop yields. The improper use of these applied chemicals may lead to serious degradation of surface water quality. Surface waters are primarily contaminated by the runoff of irrigated agriculture containing sediments, nutrients such as phosphorus and nitrogen, pesticides and other pollutants. Problems associated with dairy operations in the San Diego Region include surface runoff of biodegradable and suspended material.

Erosion from agriculture uses can result in the loss of agricultural production, and degrade important aquatic habitat. Eroded soils can bury benthic (e.g., bottom dwelling) communities, cover spawning grounds, destabilize channel banks and fill sensitive wetland areas. Furthermore, other pollutants are often bound to eroded soils. Under certain conditions, these pollutants may be remobilized into the water column causing problems for human health, wildlife and aquatic resources. The State and Regional Boards have adopted narrative standards that prohibit the impairment of aquatic habitat from erosion.

The H.G. Fenton Company site is located northeast of the project site. Drainage from this existing sand and gravel mining operation and concrete batch plant flows into the San Luis Rey River. The project site is located directly downstream from this use.

The largest volume of waste from sand and gravel processing operations results from product washing. Many of the sedimentary deposits mined for sand and gravel in the San Diego region contain a high percentage of silt and clay. Extensive washing is required to remove the fine material. Other waste includes cement truck wash water, sediment separated from the wash water, and rejected product.

Recycled wash waters are discharged to storage ponds and can contain high concentrations of total dissolved solids because of evaporation and leaching from product materials. Sediment and wash water discharged to surface waters can adversely affect aquatic life through sediment deposition and increases in turbidity.

At the project site, runoff from SR 76 currently flows into the San Luis Rey River. Sources of contamination from SR 76 may include: pavement wear and asphalt surface leachate, tire wear (e.g., lead oxide filler material, lubricating oil and grease, bearing wear), spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids and roadside application of fungicides and insecticides.

4.4.2 IMPACT SIGNIFICANCE CRITERIA

Appendix G of the State CEQA Guidelines provides environmental checklist questions for determining significant environmental impacts on hydrology and surface water quality. Using these questions, the project would result in a significant impact on hydrology and water quality if the project would:

- Substantially degrade water quality or violate any water quality standards or waste discharge requirements
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Place within a 100-year Flood Hazard Area structures which would impede or redirect flood flows
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam

4.4.3 POTENTIAL IMPACTS

Construction and operation of the proposed Gregory Canyon Landfill could potentially impact the quantity and quality of surface water runoff in the project area and adjacent off-site areas. (Effects on groundwater are discussed in Section 4.3, Hydrogeology.) The potential impacts can be categorized into short-term (construction-related) and long-term (operational) impacts.

4.4.3.1 Short-Term (Construction-Related) Impacts

Construction impacts are analyzed for SR 76 road improvements, construction of the access road and bridge, and construction of the landfill and associated facilities.

Under the requirements of NPDES, the project applicant would be required to obtain both a General Construction Storm Water Permit and a General Industrial Storm Water Permit, which contain the following three major requirements: (1) eliminate non-storm water discharges; (2) develop and implement a Storm Water Pollution Prevention Plan; and (3) develop and implement a Monitoring and Reporting Program in accordance with the General Permit. The site-specific plan typically consists of all Best Management Practices (BMPs) which will be implemented at a facility to reduce or eliminate the discharge of pollutants to storm water which is the most important requirement and the key to source controls.

The overall objective of the entire storm water program is to reduce or eliminate the discharge of pollutants into the storm water conveyance system. The permit objective is achieved by way of pollution prevention. To eliminate pollutants in storm water, one can either clean it up by removing pollutants or prevent it from becoming polluted in the first place. Because of the overwhelming volume of storm water and the enormous costs associated with pollutant removal, pollution prevention is the only practical approach. Pollution prevention which means stopping the generation of pollution at its source by reducing the use of products containing pollutants, is in fact, the basis of the entire storm water permitting program. Once pollutants have been generated, pollution control BMPs must be employed to prevent the existing pollution from coming into contact with waters of the State.

Effluent limitations for discharge from an individual point source are included in the WDRs or NPDES permits. The effluent limitations are placed on the quality and quantity of the waste discharge or effluent and can be either numeric and/or narrative limitations. Effluent limitations are based on applicable water quality objectives, U.S. EPA effluent guidelines and standards, beneficial uses for the area of effluent disposal, and applicable state and federal regulations and policies.

Construction of the access road/bridge would result in a localized constriction of the San Luis Rey River. However, excavation of the riverbed will minimize any increases in 100-year flood elevations, caused by the localized constriction of the San Luis Rey River resulting from bridge construction. The proposed channel modifications have been designed to maintain the existing channel velocities and flood elevations upstream and downstream of those modifications. Grading of the river channel will reduce flooding impacts to a less than significant level. The channel excavation and bridge construction would result in the removal of approximately 16,000 cubic yards of material. This material would be stockpiled and utilized at the project site. The channel excavation would occur entirely on the south bank of the channel, within a very limited area. Because of the bridge lengthening (a project revision between the January 1999 DEIR and December 1999 RDEIR) the required volume of excavated cover material has been substantially reduced. Erosion control measures will minimize erosion and sediment will be controlled with BMPs (e.g., sediment basins, earth berms, rip-rap and diversion dams). No significant impacts to the beneficial uses of the San Luis Rey River would occur. The reduced channel grading will minimize impacts to the existing wetland and riparian habitat and to the existing riverbed channel.

Bridge construction would be completed approximately within a six month period. A construction zone will be established beneath and adjacent to the bridge deck, which includes the bridge footprint and 50 feet to one side of the bridge. The vegetation within the construction zone would be removed. The bridge pilings would be cased and drilled holes. The bridge deck would be laid with cranes located in the construction zone. Hazardous materials would not be stored within the bridge construction zone. No significant impacts associated with constructing the bridge within the 100-year floodplain would occur.

The project includes modifications to SR 76 at the access road entrance to improve sight distance and to facilitate truck turning movements. The proposed widening of SR 76 will encroach into the 100-year floodplain at its western limits and was assumed to utilize 2:1 cut and fill slopes.

This encroachment is minimal and would not impact the 100-year flood elevations or channel velocities.

Initial grading of the landfill and associated facilities would partially eliminate ground cover on the project site, and thereby increase the project site's susceptibility to the influences of flooding and surficial erosion. BMPs would be employed to reduce the potential impacts of flooding and erosion. One of these BMPs includes the design and engineered use of a temporary drainage collection basin that is part of the Phase I excavation for the landfill. Implementation of this BMP, and other project BMPs, (e.g., siltfences, erosion control blankets, straw wattles, biofilter bags, and revegetation of disturbed slopes where applicable) would reduce flooding and erosion impacts, provide sediment control during construction to a less than significant level. No significant impacts to the beneficial uses of the San Luis Rey River would occur.

During construction of the landfill, surface water runoff from the site could be exposed to spills of oil or fuel from construction equipment. Therefore, as a BMP, all construction equipment would be prohibited from fueling near any natural or man-made drainage courses.

4.4.3.2 Long-Term (Operational) Impacts

For the purpose of this analysis, long-term (operational) activities include the day-to-day operation of the landfill and associated facilities and periodic construction (i.e., to prepare the next cell).

Peak stormwater flows that are estimated to occur under post-development conditions were estimated based on the Rational Method Computer program (Appendix H). The program determined that the post-development peak flows from the site would be approximately 807 cfs. This is a small increase over the 765 cfs occurring under existing conditions. This is not considered a significant increase in runoff due to the small percentage of runoff that Gregory Canyon contributes to the San Luis Rey River basin. As a result, no significant impacts would result from the new drainage patterns and the additional surface water runoff.

The Fenton Dike's hydrologic effects were modeled as part of the determination of future floodplain levels. Insofar as the dike's potential effects have been modeled and are within mandated flood control parameters, the dike would not increase the threat of flooding at the landfill and its effects on the proposed project would be less than significant. Although the dike will be prone to overtopping during large storm events (i.e., in excess of 10-year occurrence), the calculations of future 100-year flood elevations have accounted for such potentially varying conditions of the Fenton dike. As such, the Fenton dike will have no adverse impacts on the landfill site, either directly or indirectly.

The proposed landfill footprint and borrow/stockpile areas are not located within the designated boundaries of a 100-year flood plain (Exhibit 4.4-2). The access road/bridge would be located within the designated boundaries of the 100-year and 500-year floodplains (Exhibit 4.4-2). However, the lowest elevation of the access road/bridge would be 312.0 while the 100-year floodplain at the upstream face is 310.7 feet. Therefore, the access road/bridge is designed to be above the highest recorded elevation of the 100-year floodplain so that no significant flooding impacts would occur during operations.

As discussed in Section 3.5.2.2, the landfill perimeter drainage network would collect all surface water run-on from the surrounding areas and from the undisturbed areas within the refuse footprint. These flows will be conveyed around the desilting basins and discharge directly into the natural drain course at pre-development velocities. Only surface water run-off from the disturbed areas within the refuse footprint would be directed to the on-site desilting basins. The desilting basins have been designed in accordance with regulatory requirements under 27 CCR. The design criteria for the surface water control facilities including the outlet structures for the desilting basins is a 100 year 24-hour storm event. Storm event flow data was obtained from the San Diego County Hydrology Manual Rational Method. Therefore, all of the surface water control facilities including the basin outlet structures would handle the maximum flows and discharge requirements associated with the 100 year-24 hour storm event.

The purpose of the proposed desilting basins is to provide sediment control by removing silt from the stormwater flows. The desilting basins are not intended to provide water retention/holding capability. Because desilting basins are passive systems that rely on settling soil particles out of the water in a finite time period and are not 100 percent efficient in entrapping sediment, the proposed basins have been designed to function as a secondary BMP system to provide sediment control and protection of stormwater flows as required under Federal NPDES regulations. The California Storm Water Best Management Practice Handbook recommends the 10-year, 6-hour storm event as the design storm. In addition, the discharge velocities for the basins and the perimeter channel outlets have been designed to meet pre-development conditions. Both basins will be outfitted with riser pipes to dewater the basins within 72-hours of the subsidence of a storm event.

During operations, the bridge has the potential to be damaged during a major storm because of the scouring effect of flood waters. If too much sediment supporting bridge piers and abutments is scoured or undermined, the bridge could fail or become unsafe for travel. To prevent this, the proposed bridge structure would be founded on deep pile-supported foundations to protect against potential stream scour effects. Standard seat type abutments on pile footing, and five intermediate bents would be used to support the bridge superstructure. Seat type abutments would be protected from local scour by a surrounding blanket of rock slope protection and deeply founded concrete piles. Pile tip elevations have been estimated for planning purposes based on the foundation depths of adjacent bridge structures along the San Luis Rey River. The estimated depth of pile foundations is approximately 80 feet below the existing river bottom. The proposed foundation depths have also been based on river bed scour potential and estimated structural support requirements.

The bridge footings would be designed to safeguard against potential scour, which consists of the total of general and local scour. As a conservative measure, the simulated general scour for the case of flood series and pit capture is recommended for the bridge design. The total scour (general plus local) will reach the bed elevation of 276.0 feet. Footings should be located below the elevation of total scour.

To reduce scour effects, rip-rap or some other protective material (gabions, armorflex, etc.) would be used at the bridge abutments. It may also be placed at the low flow culvert at the south end of the bridge structure, and in limited areas along the banks of the access road south of the bridge. The exact location of rip-rap placement would be determined during the final engineering design phase. No significant flooding or scour impacts would occur.

Scour could also affect a segment of the river (both upstream and downstream) of the bridge. Therefore, the proposed channel modifications have been designed to maintain the existing channel velocities and flood elevations upstream and downstream of these modifications. No significant impacts would occur.

As noted earlier, where the First San Diego Aqueduct pipeline crosses the San Luis Rey River, it is currently subject to scouring during major storm flows. The level of scour would not be increased by the proposed project since the channel velocities and flood elevations at the point of the aqueduct crossing would not be altered by the proposed project (Lyle, 1998). No significant impacts would occur.

To reduce the potential long-term impacts of the landfill and associated facilities on surface water quality, a number of drainage features would be incorporated into the project to direct runoff away from the landfill working face and borrow/stockpile areas, to minimize erosion and resulting sediment and to provide desiltation prior to runoff discharge into the San Luis Rey River that could result from stormwater runoff.

With regard to the landfill footprint, the primary function of the proposed drainage facilities is to divert and convey stormwater flows in a controlled manner in order to minimize erosion and inhibit the potential infiltration of surface water run-on into the refuse disposal areas. On-site drainage features are designed to control stormwater that falls on the landfill and the surrounding support facilities. A berm around the landfill deck perimeter would intercept stormwater flows and direct water into the downdrains, which would convey the flows to the buried drainage pipes located around the perimeter of the refuse footprint. The buried drainage pipes would be sloped to maintain positive flow and discharge to the desilting basins (see Exhibit 3-15). These basins would act to reduce the amount of silt ultimately discharged from the landfill site. Stormwater from the surrounding facilities would sheet flow directly into the perimeter drainage channels, which would convey flows around the desilting basins and would discharge directly into the natural drainage course. Energy dissipators would reduce discharge velocities to pre-development conditions.

The downdrains would be laid perpendicular to slope contours and located atop, and anchored into, the final landfill surface. They would extend up the completed side slopes of the landfill as the filling progresses. The downdrains would also have inlets at each bench to accommodate flows along the inside edge of the benches resulting from stormwater from the landfill side slopes.

Interim drainage control features would consist of compacted earth berms around the deck perimeter and the working face, which would divert water around the refuse fill and into the downdrains and perimeter drains. Silt fences and sand bags may also be used to dissipate energy and remove silt upstream of the basin.

The borrow/stockpile areas would be graded to promote lateral runoff of precipitation into surface water control facilities which would in turn direct flows into the desilting basins located at the low point of each borrow/stockpile area. Run off would not be allowed to flow over the slopes, thereby minimizing erosion and the resulting silt. The primary erosion control measures consist of BMPs such as straw mulch track walked into the slopes areas and seeding with native plants. The primary sediment control measures consist of BMPs such as silt fences, sand bags and coir logs. The desilting basin would function as a secondary BMP for sediment control and protection of stormwater flows as required under Federal NPDES regulations. The desilting basin outlet structures for the borrow/stockpile areas have been designed in accordance with 27 CCR to meet the maximum flow and discharge requirements for a 100 year 24-hour storm event. Storm event flow data was obtained from the San Diego County Hydrology Manual Rational Method. The borrow/stockpile area basins have been designed to desilt stormwater from a 10 year 6-hour storm. Discharge velocities from the basins' outlets would meet pre-development conditions and would be outfitted with riser pipes to dewater the basins within 72-hours after the storm event. The basin for Borrow/Stockpile Area A would be located in the northwest corner of the designated area and the basin for Borrow/Stockpile Area B would be located at the southwest corner of the borrow/stockpile area. From the desilting basins, the runoff would flow into the existing canyons and then outfall into the San Luis Rey River.

The discharge from the subdrain system will be collected in a 10,000-gallon holding tank located in the southwest portion of the ancillary facilities area. Subdrain system drainage water will be reused on-site or may be discharged to the San Luis Rey River under the project's NPDES permit only after tests determine the water is not contaminated. Any contaminated water will be treated at the landfill by the on-site reverse osmosis system or transported to an appropriate off-site disposal facility. No significant erosion and sedimentation impacts would occur, associated with the operation of the landfill and associated facilities. In addition, no significant impacts to the beneficial uses of the San Luis Rey River would occur.

The fuel tank, which will be located at the southern end of the ancillary facilities area, will be about 750 feet from the river, depending on seasonal flows. The tank will be installed in accordance with all applicable regulations. A spill kit will be provided adjacent to the fueling area to be used in the event of a spill during fueling. The safety features incorporated in the regulations, the concrete containment wall around the tank, the spill kit, and the location of the tank within the ancillary facilities area would ensure that a leak in the tank would not result in diesel fuel reaching the river.

With regard to run off from the ancillary facilities area, vehicular activities associated with routine operation and the receipt of refuse for disposal could result in trace petroleum hydrocarbons and tracking of sediments onto the paved surfaces of the ancillary facilities area including the queuing area for the fee booths and scales, main haul road, landfill equipment maintenance and re-fueling areas. The BMP's to be implemented specific to the ancillary facilities areas would include dry measures such as cleaning the paved surfaces of sediment with a street sweeper and the use of absorbents for leaks and spills from vehicular activities. The equipment maintenance area has been designed to eliminate contact with stormwater by conducting operations in a covered area and diverting flows around the entire ancillary facilities area. In addition, the hazardous waste storage facility, which is located in the ancillary facilities area, would be enclosed with secondary containment. The stormwater discharge from the ancillary facilities area would also include a filter/oil-water separator as a secondary BMP to filter any remaining trace hydrocarbons and/or sediments. Therefore, impacts to stormwater quality from these activities in the ancillary facilities area would be less than significant.

In the event of a failure of the SDCWA aqueduct, the armored slopes and the perimeter channels would convey the runoff away from the landfill. The perimeter drainage channel along the west side of the landfill is designed to handle peak flows that could occur under a combination of 100-year flood conditions plus a simultaneous rupture of the existing Pipelines 1 and 2 and the future Pipeline No. 6, if there were a break in the pipelines.[2] The leachate collection and removal

[2] Section 3G of Proposition C requires the protection of the San Diego Aqueduct pipelines and a condition of the SWFP and a mitigation measure will require that prior to any construction work related to the landfill, the applicant shall provide DEH with a copy of the executed agreement with SDCWA providing for the relocation and protection of the San Diego Aqueduct pipelines.

system is designed to handle twice the peak flow of liquids which pass through the refuse. No significant increase in infiltration is expected due to a pipeline rupture.

The SWRCB requires Class III solid waste disposal facilities to obtain site-specific WDRs. These would be issued by the RWQCB, San Diego Region for the proposed project. The WDRs would reflect the proposed design and operational aspects of the landfill facility as well as include a Stormwater Monitoring Program and Reporting Requirements (MPRR) Plan.

To obtain authorization for industrial stormwater discharges, the landfill must also comply with a NPDES General Permit to Discharge Stormwater Associated with Industrial Activity. As a part of the application for this permit, a Stormwater Pollution Prevention Plan (SWPPP) and a MPRR Plan has been prepared for the proposed project. The SWPPP establishes controls for different sources of pollutants from industrial (and construction) activities. The MPRR Plan provides the monitoring program of the BMPs to prevent stormwater pollution as described in the SWPPP. No significant impacts would result to surface water quality or to the beneficial uses of the San Luis Rey River from project operations.

4.4.3.3 Site Closure Impacts

A Final Closure Plan will be prepared and submitted to the appropriate regulatory agencies two years prior to the anticipated closure date of the landfill. The Final Closure Plan, as well as the Preliminary Closure and Post-Closure Maintenance Plan element, will include a proposed final cover design configuration in compliance with current State and Federal regulatory requirements. The actual final cover to be placed on the landfill will be determined by the RWQCB with water pollution prevention as a foremost consideration at the time that the cover is to be placed.

In addition, the Closure Plans will address the final grading, permanent structural drainage features, stormwater management, and erosion/sediment controls in the borrow/stockpile areas. If the borrow/stockpile facilities were to be in existence at site closure, the interim environmental controls would be converted to permanent structures. The area would be graded to promote a drainage pattern as similar to the natural pre-developed drainage condition as possible. Permanent downdrains, bench drains, riprap pads, and other structural drainage features would be installed. Permanent sediment control measures (e.g., silt fencing, desilting basins) would also be installed.

In general, interim drainage will be constructed in the landfill area during the active life of the landfill. Permanent drainage in the landfill footprint would be constructed in conjunction with the landfill closure. Drainage facilities will control run-on, runoff, ponding and infiltration at the landfill. Closure of the landfill will entail requirements for the implementation of similar surface water quality protection measures as those described previously for long-term (operational) impacts. With permanent structural drainage features in accordance with BMPs, impacts to post-closure surface water quality will remain less than significant.

4.4.3.4 First San Diego Aqueduct Relocation Option

Relocation of the aqueduct would place the aqueduct further from the landfill footprint on the western side of the ridge. In the event of a rupture of the pipeline, water would run to the west, away from the landfill footprint.

If the aqueduct were relocated, an increase in soil erosion on the site both from construction and the creation of a new access road could result. The existing access road would be left to revegetate, resulting ultimately in the same amount of disturbed area. Project design features and BMPs would be used to reduce any surface water impacts to a less than significant level.

The relocation option would be located within the 100-year floodplain. If the relocation option is implemented, a Mitigation Measure will be implemented to reduce the potential for environmental impacts related to flooding to a less than significant level.

4.4.4 MITIGATION MEASURES AND PROJECT DESIGN FEATURES

Proposition C

Section 5G of Proposition C contains the following mitigation measure relative to potential surface water impacts:

MM 4.4C5G: *The project shall comply with all requirements of the Regional Water Quality Control Board to ensure protection of surface and underground water quality.*

Project Design Features

- Excavation in the river channel will be implemented upstream and downstream of the new bridge to maintain the 100-year flood elevations at or below existing levels.
- The proposed bridge structure will be founded on deep pile-supported foundations to protect against potential stream scour effects. Standard seat type abutments on pile footing, and five intermediate bents will be used to support the bridge superstructure. Seat type abutments will be protected from local scour by a surrounding blanket of rock slope protection and deeply founded concrete piles.
- To reduce scouring, rip-rap or other protective material (gabions, armorflex, etc.) will be used at the bridge abutments. It may also be placed at the low flow culvert at the south end of the bridge structure, and in limited areas along the banks of the access road south of the bridge. (The exact location of rip-rap placement will be determined during the final engineering design phase.)
- Erosion and resulting sediment will be controlled with BMPs.
- The landfill working face and borrow/stockpile areas have been designed to direct runoff away from the landfill working face. On-site drainage features are designed to control stormwater that falls on the landfill and surrounding support facilities. The berm around the landfill deck perimeter would intercept stormwater flows and direct water into the downdrains, which would convey the flows to perimeter channels. Water in the perimeter channels will flow into one of two desilting basins and will be tested prior to discharge to the San Luis Rey River.
- Before each rainy season, after each major storm, and monthly during the rain season, all drainage facilities will be inspected and any required maintenance performed to ensure that the drainage channels and desilting basins function properly.

Impacts and Mitigation Measures

Potentially significant surface water impacts have been reduced to a level of insignificance through project design features and BMPs. Therefore, no mitigation measures are proposed for this project.

First San Diego Aqueduct Relocation Option

If the First San Diego Aqueduct were relocated, the following Mitigation Measure shall be incorporated.

Impact 4.4-1: *Relocation of the First San Diego Aqueduct, if implemented, would place a small portion of the pipelines within the 100-year floodplain, potentially resulting in environmental impacts to the pipelines.*

MM 4.4-1: If relocation of the First San Diego Aqueduct pipelines is implemented, the applicant shall design and engineer the relocation so that no flood related impacts to the pipelines would occur, in accordance with SDCWA approval. Alternately, the relocation shall be adjusted to avoid placement of the pipelines within the 100-year floodplain.

4.4.5 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The potential hydrology and water quality impacts that could result from the proposed project would be reduced to a less than significant level through project design features, implementation of BMPs, and compliance with applicable permits.